F8 - Interferometric Techniques in Remote Sensing

GeoSAR: A RADAR TERRAIN MAPPING SYSTEM FOR THE NEW MILLENNIUM

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interferometry

GeoSAR (Geographic Synthetic Aperture Radar) is a new 3 year effort to build a unique, dual-frequency, airborne Interferometric SAR for mapping of terrain. This is being pursued via a Consortium of the Jet Propulsion Laboratory (JPL), Calgis, Inc., and the California Department of Conservation. The airborne portion of this system will operate on a Calgis Gulfstream-II aircraft outfitted with P- and X-band Interferometric SARs. The ground portions of this system will be a suite of Flight Planning Software, an IFSAR Processor and a Radar-GIS Workstation.

The airborne P-band and X-band radars will be constructed by JPL with the goal of obtaining foliage penetration at the longer P-band wavelengths. The P-band and X-band radar will operate at frequencies of 350 Mhz and 9.71 Ghz with bandwidths of either 80 or 160 Mhz. The airborne radars will be complemented with airborne laser system for measuring antenna positions. Aircraft flight lines and radar operating instructions will be computed with the Flight Planning Software

The ground processing will be a two-step step process. First, the raw radar data will be processed into radar images and interferometer derived Digital Elevation Models (DEMs). Second, these radar images and DEMs will be processed with a Radar GIS Workstation which performs processes such as Projection Transformations, Registration, Geometric Adjustment, Mosaicking, Merging and Database Management. JPL will construct the IFSAR Processor and Calgis, Inc. will construct the Radar GIS Workstation.

The GeoSAR Project was underway in November 1996 with a goal of having the radars and laser systems fully integrated onto the Calgis Gulfstream-II aircraft in early 1999. Then, Engineering Checkout and Calibration-Characterization Flights will be conducted through November 1999. The system will be completed at the end of 1999 and ready for routine operations in the year 2000.